

DESCRIPTIONS OF THE ANIMALS OF TWO LAND SHELLS FROM  
PERAK. "SKEAT EXPEDITION IN THE MALAY PENINSULA,  
1899-1900."

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PLATE XV.

1. LEPTODONTARION PERAKENSIS, n.sp. Pl. XV, Figs. 1-1*d*.

*Hab.*—Talun, Perak; "Skeat Expedition," in Brit. Mus. Collection.

Shell very globose, thin, and membranaceous; spire low, apex rounded; peristome somewhat sinuate; suture moderately impressed; no sculpture, smooth, shiny; colour ochraceous green; whorls  $3\frac{1}{2}$ ; aperture and columellar margin not seen. Only one specimen received, and to examine the animal the shell was broken to extract it. Major diam. 6.3 mm.; diam. of shell figured 5.5 mm. (Figs. 1, 1*a*). Animal (Figs. 1*b*, 1*c*, 1*d*) pale-coloured throughout, without markings of any kind. The right shell lobe in figure (1*c*) is shown rolled up by contraction in the spirit; it is long, fairly wide, of even breadth at first, then narrowing, and in life would cover the portion of the shell below and on side of the periphery. The young specimen from the Cambridge Museum, a good deal contracted by the spirit, shows the right shell lobe unfolded (Fig. 1*b*). There is a very small left shell lobe. The right dorsal lobe is large and triangular, the left dorsal lobe in two distinct lappets. The foot is pointed and has a long overhanging lobe. The peripodial grooves are well marked, sole indistinctly divided. Length of the animal about 16 mm.

The jaw (Fig. 2, line block) is nearly straight, narrow, the cutting-edge slightly concave; it is thin and transparent, arched above, merging into the muscular tissue.

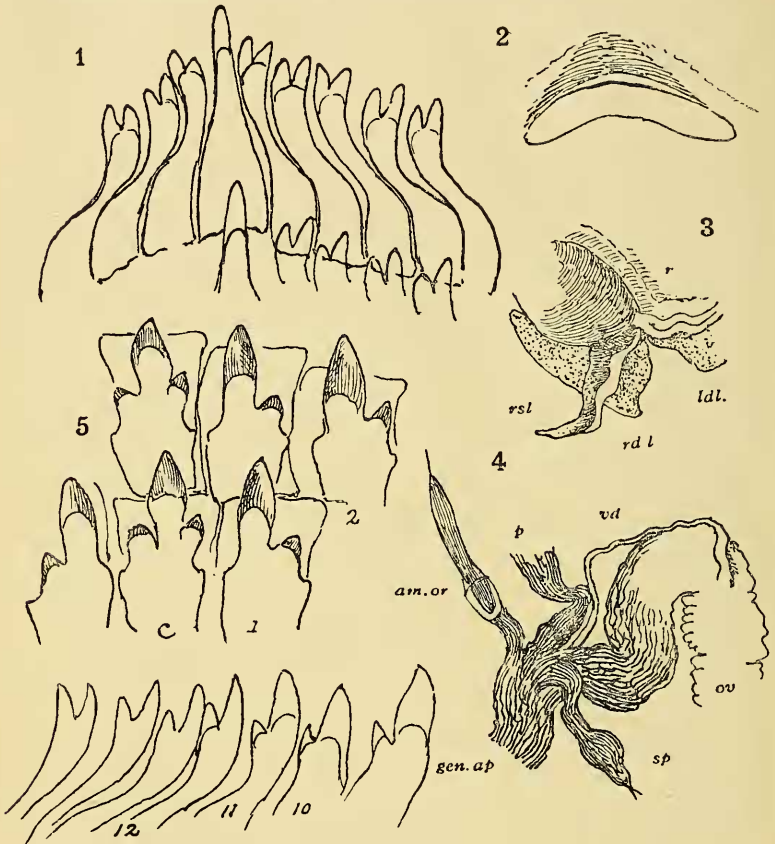
The radula (Fig. 1, line block) consists of numerous rows of similar curved teeth having a great number in a row, on long narrow plates. The centre tooth is unicuspid, very long and pointed, the base gradually widening out. All the admedians are nearly evenly bicuspid, the outer cusp being very slightly the longer.

The genitalia (Fig. 4, line block) were not got out quite perfect. An amatorial organ with a blunt point is present, also a short ovoid spermatheca with club-like free end; the penis was broken off.

This species has most interesting similarity to *Leptodontarion Hiraseanus* from Formosa, both in the jaw and radula and outward form, even to the globose shape of the shell, but *Hiraseanus* is even more globose. The generative organs differ in the presence of the amatorial organ and in other details. Its relationship is therefore closer with the Indian species, *L. minuta* of Assam, as might be expected, than with the Formosan form.

This mollusc, one of seven, had been presented to the Natural History Museum by Messrs. Annandale and Robinson in May, 1904, for

the "Skeat Expedition." It bore the name—determined apparently by Mr. Collinge—of *Helicarion permolle*, Stoliczka. This was a species I had long wished to dissect, and Mr. Edgar Smith was kind enough to allow me to take a specimen for this purpose.



1. *Leptodontarion Perakensis*. Central teeth of the radula very much enlarged.  
From Natural History Museum specimen.
2. Jaw.  $\times 30$ .
3. Mantle-zone, showing right shell lobe, etc.
4. Part of the genitalia.
5. *Sitala* (?) *Gunongensis*, n.sp. Central and admedian teeth of the radula.

*Helicarion permolle* from Penang Hill is described in the Journal of the Asiatic Society of Bengal, 1873, vol. xlii, pt. ii, p. 18, pl. i, fig. 11 (shell); pl. ii, figs. 21-3 (radula and generative organs). It will be seen that all these characters differ considerably from those of the Perak mollusc, which belongs, in fact, to a different sub-family,

the Durgellinæ. The character of the anatomy of *H. permolle* approaches that of *Sitala*. Stoliczka says of the shell "ad basin striis spiralibus sub-obsolete notata," and also "the rather strongly elevated spire and membranaceous transparent structure of the shell separate this species from the numerous allied forms of the Philippines." The italics are mine, *vide* figs. 11-11*d* (Pl. XV, Fig. 3).

*H. permolle*, Stol., is included by Mr. Collinge in his paper on the mollusca collected by the "Skeat Expedition" in the Malay Peninsula (Journ. Malacology, 1902, vol. iv, p. 73); hab., Gunong Inas, 3000 feet, State of Perak. It was not figured or described. Mr. Collinge says, "This is certainly the mollusc described by Stoliczka, for both externally and internally it agrees with his descriptions and figures." Some mixing of species in submitting them to the British Museum must have occurred. The animal named *H. permolle*, which I now describe, cannot possibly be the same Mr. Collinge examined and catalogued. Compare the radula figured by Stoliczka of *H. permolle*, with the central and admedian teeth on quadrate plates, and that of the specimen I received from Mr. E. A. Smith, with its very numerous and similar teeth on very narrow plates, showing generic differences. The shell and genitalia also differ in the two species.

Further, in order to clear up the doubt hanging over the distribution of the Penang shell *H. permolle*, with the kind assistance of Dr. S. F. Harmer and Mr. C. L. Boulenger I have been able to examine the specimens under that name in the Cambridge Museum. The tube contained the right number of specimens, but they represented three species.

(a) One specimen similar to those in the Natural History Museum (*Leptodontarion*). (Pl. XV, Fig. 1*b*, animal and shell.)

(b) Three specimens which I feel sure from the form of the shell represent *H. permolle*, yet when compared with Stoliczka's figures on pl. i, figs. 11-11*b*, cannot be that shell, although there are many resemblances indicated in Stoliczka's description of the animal. They possibly belong to the same genus. I now put them both provisionally in *Sitala*. This genus now holds in the Indian region ("Fauna British India" (Mollusca), 1908, p. 225) some twenty-six species, and of the majority nothing is known of their anatomy. In course of time, as our knowledge increases, it is quite evident they will require to be separated into new generic divisions.

(c) A shell which much resembles the young of *Macrochlamys* (?) *Townsendiana*, G.-A. & Nev.

## 2. SITALA (?) GUNONGENSIS, n.sp. (shell and animal). Pl. XV,

Figs. 2-2*c*.

*Hab.*—Gunong Inas, Perak State; "Skeat Expedition."

Shell globosely conoid, not umbilicated, with well-defined wavy longitudinal striation, strong on base; colour pale burnt sienna, milky-white on apical whorls; spire low, sides flat; apex blunt; suture shallow; whorls 4, the last inflated, regularly increasing; aperture

lunate; peristome thin; columellar margin nearly perpendicular, rounded, and reflected. Major diam. 5·7 mm.

*Animal*.—Foot well divided; the peripodial margin would appear in life to be paler than the part above, a small overhanging lobe. There is a small pointed right shell lobe, also a well-developed left shell lobe (Figs. 2*b*, 2*c*). The animal was in a very hardened state; plain water had scarcely any effect in softening it, so I used at last a little caustic potash. This, of course, destroyed the internal organs, but I secured the radula; the jaw unfortunately was not found. This radula has the formula 60 . 2 . 10 . 1 . 10 . 2 . 60, or 72 . 1 . 72; total in row, 145. The centrals and admedians are on elongate quadrate plates, the main point or mesocone being long and spindle-shaped; below the side cusp there is a conspicuous sharp shoulder; the marginals are very evenly bicuspid, becoming gradually very minute towards the outer edge; some of these minute teeth are tricuspoid; there is no serration, as seen in the teeth of the radula of *Lamprocystis*.

#### EXPLANATION OF PLATE XV.

FIG.

- 1, 1*a*. *Leptodontarion Perakensis*, n.sp. Shell. × 4·5.
- 1*b*. Ditto. Cambridge specimen, with animal.
- 1*c*. Ditto. Animal, right side, Natural History Museum specimen. × 4·5. *ot*, oral tentacle.
- 1*d*. Ditto. Animal, left side. Ditto. × 4·5.
- 2, 2*a*. *Sitala* (?) *Gunongensis*, n.sp. Shell. × 4·5.
- 2*b*. Ditto. Animal, shell removed, from right side. × 4·5.
- 2*c*. Ditto. Ditto, from left side. × 4·5.
3. *Helicarion permolle*, Stol. From figs. in J.A.S.B., 1873, pl. i, fig. 11. Enlarged and natural size.